Post-stroke rehabilitation

Health & Medicine

Post-Stroke Rehabilitation Stroke, if survived, is the largest cause of long-term disabilities in the United States. Nearly 160, 000 Americans have strokes every year, killing one of three individuals (reference?). Due to our nation’s ageing population, the stroke epidemic is expected to increase nearly 25% by year 2030 (Brewer, 2012). These stroke-related disabilities impact the survivor’s quality of life and independence in everyday activities. Nearly 50% to 75% of all stroke survivors have residual cognitive or motor disabilities that prevent them from living independently (neuro-rehab reference).

To determine a successful post-stroke rehabilitation for these survivors, therapists must decide on the best form of therapy, study cause and risk factors of stroke prevalence, and consider long-term effects of impairments (reference). The most recognized disability after a stroke is motor impairment. The main focus on recovery in survivors is to reduce their disability and to live independently again by participating in their normal everyday activities (Brewer, 2012). Clinical experiments have been done with robotic therapy in an attempt to find the best possible form of a successful functional recovery.

It has been observed that robotic possibilities for establishing rehabilitation go beyond what a normal therapist can do. One component of this approach is the use of resistance in a direction opposite the movement. Interestingly, several researchers are still currently exploring robotic techniques that are not necessarily designed to imitate the therapeutic process, but actually probe new capabilities. For example, one possible technique that is being studied is to have the robot guide or pull the hand toward the desired

trajectory and have the guidance transition to resistance as the client's recovery progresses (Kovic, 2006).

Robot- assisted therapy, in itself, has had the most success in functional recovery among these survivors. Therapists can still use hands on approach with their clients, but are able to use robotic techniques until their patients are strong enough to not require any more assistance in learning everyday functions (Brewer, 2012). The whole purpose of therapy is to re-teach motor functions that the patients need to perform in their daily lives. Task-oriented skills in functional recovery should be key in therapy, rather it is by use of robotics or not. Another form of post-stroke rehabilitation is adaptive training. Brewer)Robotic techniques are most often used as adaptive training to facilitate motor recovery (Kovic, 2006). In JRRD#2, research was done to suggest that adaptive training was a promising novel approach to a post-stroke recovery. In their research, Patton, Kovic, and Mussa-Ivaldi used the natural adaptive tendencies of the nervous system to facilitate motor recovery. " Motor adaption studies have demonstrated that when people are repeatedly exposed to a force field that systematically disturbs arm motion, subjects learn to anticipate and cancel out the forces and recover their original kinematic patterns.

After the disturbing force field is unexpectedly removed, the subjects make erroneous movements in directions opposite the perturbing effects. This technique has recently been shown to alter and hasten the learning process in nondisabled individuals (p644). The researchers conducted an initial pilot study to show how adaptive training might be useful for restoring arm

movement. These stroke survivors showed less conspicuous results compared with nondisabled subjects exposed to the same technique.

Basically, their results support the view that subjects can adapt by learning the appropriate internal model of the perturbation rather than learning a temporary sequence of muscle activations; however, adaptive training will only work if stroke patients can adapt. Their results concluded that motion is impaired because of an ineffective motor plan that can be changed through structured adaptive training. (do I need reference here too?) Risk factors increase a person’s chance of having a stroke. Those who smoke have a 50% more likely chance to have a stroke versus people who do not smoke.

High blood pressure is probably the highest most common risk factor (Brockelbrink, 2011). Risk factors can be placed into either modifiable or non-modifiable groups. Many modifiable risk factors result from our individual lifestyle habits such assmokingor a diet high in fat, salt, and sugar and normally can be modified by specialists in the healthcare industry (Allen, 2008). Non-modifiable factors are related to heredity, natural processes due to our gender or age. Long-term effects with disabilities and impairments are different for each stroke victim.

A number of qualified studies have shown that 50% to 75% of stroke victims cannot live independently at home (Boyd, 2009). Most long-term effects are not overcome by the older population. The younger the victim the more likely they are to experience a more positive post-stroke rehabilitation experience. Majority of long-term effects have been linked to the victim’s social status in life. The ones with highereducation, higher wealth, more

popularity, more involvement have shown the biggest increase in overcoming disabilities.

Even so, families who show interaction and help in a positive way with rehabilitation of their loved ones have shown the biggest impact over everything. Strokes are estimated to become the largest cause of death globally by 2030 (Brewery, 2012). The advances oftechnologyand medicine will have progress along in heart disease and cancer, leaving strokes as the biggest threat to our loved ones. References Brewer, L. , Hickey, A. , Horgan, F. , Williams, D. (2012) Stroke Rehabilitation: Recent Advances and Future Therapies.

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